



ICAO ENGINE EXHAUST EMISSIONS DATA SHEET

SUBSONIC ENGINES

ENGINE IDENTIFICATION: Trent 1000-D
 UNIQUE ID NUMBER: 12RR057
 COMBUSTOR: Phase5 Tiled
 ENGINE TYPE: TF

BYPASS RATIO: 9.3
 PRESSURE RATIO (π_{00}): 43.8
 RATED THRUST (F_{00}) (kN): 334.7

REGULATORY DATA **** DATA SUPERSEDED **** SEE FOLLOWING UID FOR REVISED DATA: **12RR063**

CHARACTERISTIC VALUE:	HC	CO	NO _x	SMOKE NUMBER
D _p /F ₀₀ (g/kN) or SN	0.0	10.0	65.5	6.5
AS % OF ORIGINAL LIMIT	0.2	8.5	51.3	38.2
AS % OF CAEP/2 LIMIT (NO _x)			64.2	
AS % OF CAEP/4 LIMIT (NO _x)			69.2	
AS % OF CAEP/6 LIMIT (NO _x)			75.7	
AS % OF CAEP/8 LIMIT (NO _x)			84.3	

DATA STATUS

- PRE-REGULATION
 x CERTIFICATION
 x REVISED (SEE REMARKS)

TEST ENGINE STATUS

- NEWLY MANUFACTURED ENGINES
 x DEDICATED ENGINES TO PRODUCTION STANDARD
 - OTHER (SEE REMARKS)

EMISSIONS STATUS

x DATA CORRECTED TO REFERENCE
 (ANNEX 16 VOLUME II)

CURRENT ENGINE STATUS

(IN PRODUCTION, IN SERVICE UNLESS OTHERWISE NOTED)
 x OUT OF PRODUCTION (DATE: -)
 - OUT OF SERVICE (DATE: -)

MEASURED DATA

MODE	POWER SETTING (%F ₀₀)	TIME (minutes)	FUEL FLOW (kg/s)	EMISSIONS INDICES (g/kg)			SMOKE NUMBER
				HC	CO	NO _x	
TAKE-OFF	100	0.7	2.508	0.00	0.50	53.53	3.3
CLIMB OUT	85	2.2	2.048	0.00	0.48	39.98	3.8
APPROACH	30	4.0	0.668	0.00	0.65	13.77	3.9
IDLE	7	26.0	0.247	0.03	7.41	5.72	0.5
LTO TOTAL FUEL (kg) or EMISSIONS (g)			921	12	3138	20854	-
NUMBER OF ENGINES				4	4	4	4
NUMBER OF TESTS				8	8	8	8
AVERAGE D _p /F ₀₀ (g/kN) or AVERAGE SN (MAX)				0.0	9.4	62.3	6.0
SIGMA (D _p /F ₀₀ in g/kN, or SN)				0.0	2.5	0.8	2.3
RANGE (D _p /F ₀₀ in g/kN, or SN)				0-0.08	6.33-12.18	61.52-63.28	3-8.3

ACCESSORY LOADS

POWER EXTRACTION 0 (kW) AT - POWER SETTINGS
 STAGE BLEED 0 (% CORE FLOW) AT - POWER SETTINGS

ATMOSPHERIC CONDITIONS

BAROMETER (kPa)	98.9-102.1
TEMPERATURE (K)	284.1-293.2
ABS HUMIDITY (kg/kg)	0.00432-0.00968

FUEL

SPEC	
H/C	1.9
AROM (%)	17.4

MANUFACTURER: Rolls-Royce plc
 TEST ORGANIZATION: Rolls-Royce
 TEST LOCATION: Derby
 TEST DATES: 24/09/2009-03/08/2012

NO_x REGULATION PARAGRAPH

	2.3.2 c) (CAEP/4)
	2.3.2 d) (CAEP/6)
x	2.3.2 e) (CAEP/8)

REMARKS

1. Representative of Package B engines
2. DNS170301
3. Certification in accordance with Part III, Chapter 2, of Amendment 7 of ICAO Annex 16 Vol. II.
4. NO_x levels in accordance with Part III, Chapter 2, 2.3.2 e) (CAEP/8)

Compliance with Fuel Venting requirements: x ('x' if complies, 'PR' if pre-regulation, '-' if information is not available)